

HOME ECONOMICS

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VII. THE FUEL FOODS—FATS

WHILE a certain amount of proteid food, varying according to individual conditions, is absolutely necessary for the maintenance of the body, the heat and energy needed may be supplied by the proteids themselves, by sugar and starch, or by fat. It is not a matter of indifference how the proportions of these vary, yet so great is the adaptability of the human system that where one is not abundantly available the others can largely replace it and serve its purpose. One may live very largely upon proteid food, the body using this not only for building, but for fuel, but this has two disadvantages and is not an ideal condition. In the first place, proteid food is, as a rule, more expensive than other foods, especially than starch, and it is poor economy to use an expensive article when a cheaper one will serve the purpose equally well. A more important reason lies in the relative proportion of carbon and nitrogen in the proteids. A certain amount of each is necessary in the maintenance of the body-functions. If enough proteid food is eaten to supply all the carbon necessary, more nitrogen than is required will be consumed. In the endeavor to dispose of this superfluous nitrogen the excretory organs, particularly the kidneys, are often overtaxed, and disease results.

Not only the carbohydrates, but the fats, are composed of the three elements, carbon, hydrogen, and oxygen, but in the fats these elements are in very different proportion from that in which they exist in the sugars and starches, the most important difference being the smaller amount of oxygen in the fats. In consequence of this they are capable of uniting with a larger proportion of the oxygen of the air, and when burned they give, pound for pound, more than twice as much heat as the proteids or the carbohydrates.

It is very necessary that in adjusting the amount of food we use to the amount of energy required for bodily processes and outside work we have some measure of the heat afforded by different substances. This measure is found in the calorie—the amount of heat necessary to raise one litre of water one degree centigrade, or, what is practically the same thing, the amount needed to raise one pound of water four degrees Fahrenheit. Sometimes the small calorie, or one one-thousandth of this large calorie, is used as the unit of heat, but in dealing with foods the

large calorie is more convenient. Using this as our measure, we find that one gramme (about one-twenty-eighth of an ounce) of proteid, or of starch, yields 4.1 calories, while one gramme of fat yields 9.3 calories, or one pound of proteid gives one thousand eight hundred and sixty calories, one pound of carbohydrate gives one thousand eight hundred and sixty calories, and one pound of fat gives four thousand two hundred and twenty calories.

The number of calories needed each day by an average person varies from three thousand to four thousand, according to the amount of work performed and other conditions.

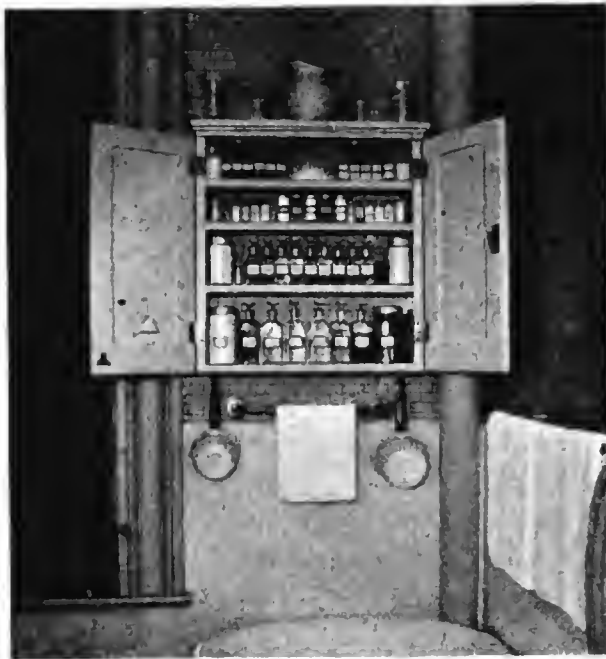
The common fats are made up chiefly of mixtures, in varying proportions, of three substances—stearin, palmitin, and olein. Of these stearin is the most solid, and it is this that gives the firm consistency to beef and mutton fat. Olive oil is chiefly olein, a semi-liquid fat at ordinary temperatures, with some palmitin. Butter contains not only palmitin and stearin, but a number of other fats.

The familiar process of soapmaking is carried on by adding some alkali, as potash or caustic soda, to fat. All the fats can be changed to soap in this way, with the formation of glycerine as a by-product. In the digestion of fat, which takes place wholly in the intestines, some of the fat, and possibly all of it, is saponified.

When fats are heated they do not boil. The bubbling that we often see simply shows that water is mixed with the fat. At a certain temperature, different for each fat, decomposition takes place, and certain irritating products are formed. It is probably due to these products that fried food is so often indigestible to persons with delicate stomachs. Fats which, like olive oil, have a high "cracking point," as it is sometimes called, are consequently more desirable for frying purposes than those which decompose at relatively low temperatures. The burning of fat, as in making a brown sauce, renders it less digestible for a similar reason.

Starch and fat are, within certain limits, interchangeable in the diet. The Laplander, because starch is expensive and difficult to obtain, as well as because of the greater heat-producing power of the fat, supplies his carbonaceous food chiefly from fat; the Japanese, with his abundant supply of rice at hand, uses more carbohydrate. Some fat is necessary in all diets, and often too little is supplied for health. Children especially need to be watched to see that a proper amount is present in their food.

There is a marked difference in the digestibility of different fats. Cream is generally considered the most digestible form in which it can be given, and butter ranks high in this respect. The yolk of egg is rich



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in fat in a digestible form, and bacon is considered an excellent form in which to give fat.

Fat is found in generous amounts in cocoa, olives, and nuts. Nuts especially deserve more general recognition than they have had as a valuable food, not simply as an adjunct to a hearty meal.

Mrs. Abel in one of the Rumford leaflets gives the following table of the percentage of fats in different foods: Meat (spoken of as lean), five to twelve per cent.; eggs, twelve per cent.; milk three to four per cent.; butter, eighty to ninety per cent.; cheese, eight to thirty per cent.; green vegetables, 0.3 per cent.; nuts, fifty-three to sixty-six per cent.; wheat and rye, one to two per cent.; oats, four to five per cent.; corn, five to six per cent.

(To be continued.)

THE HOME MEDICINE CLOSET

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It is a common experience in connection with sickness or any small emergency at home to have to collect from different places in the house the various things that may be needed. Often one does not have on hand some simple remedy that may be required for a guest visiting in the house or for one of the servants. There are always varying needs arising unexpectedly, and it is not pleasant to fail to meet them in the simplest and easiest way. When the family is a large one certain remedies are apt to be kept in one room and others in another, where there is always the possibility of their not being available when wanted. If the medicines, etc., can be kept together in one place and always found there, it is not necessary to have a special closet made, though that is more practical. It is certainly helpful to have the medicines, etc., kept where there is a good light. The family bathroom is suggested as a good place, and as being more available than any bedroom. Sometimes there is a good space in an upstairs hall, or hall closet. The supplies should be kept high enough to be out of the reach of children, and they should be kept locked, with the key hanging near by, not in sight, but in a place known to the adults in the house. Old prescriptions should be discarded when no longer in use. The medicines should be kept fresh and every bottle should be distinctly labelled. Glass-stoppered bottles are advised as being more easily kept clean and more economical in the end. A small supply of clean empty bottles and new corks of different sizes is helpful